

Listing of the Claims

1. (previously presented) A method of identifying multiple packets in a communication flow between a source entity and a destination entity, comprising:
 - storing, in a network interface for the destination entity, a first flow identifier of a first packet received from a source entity for a destination entity, wherein said first flow identifier comprises an identifier of the source entity and an identifier of the destination entity, including source and destination Transmission Control Protocol (TCP) port numbers;
 - decoding, by said network interface, a header of the first packet to determine a length of data to be stored in said destination entity, wherein said header conforms to a protocol above TCP;
 - storing, in said network interface, said first packet in a packet memory for transfer toward the destination entity;
 - storing, in said network interface, a second flow identifier of a second packet;
 - storing, in said network interface, said second packet in said packet memory;
 - determining whether said first flow identifier matches said second flow identifier;
 - storing a first indicator in the destination entity if a first communication flow identified by said first flow identifier comprises said second packet; and
 - storing a second indicator in the destination entity if said first packet is the only packet stored in the packet memory that is part of said first communication flow.
2. (original) The method of claim 1, further comprising, prior to said storing a first flow identifier, parsing said first packet to retrieve said identifier of the source entity and said identifier of the destination entity.
3. (previously presented) A method of identifying one or more packets in a communication flow between a source entity and a destination entity, comprising:
 - receiving a first packet at a communication device that is a network interface for a host computer;

identifying, by said network interface, a first communication flow comprising said first packet with a first flow identifier configured to identify both the source entity and the destination entity, said first flow identifier including source and destination Transmission Control Protocol (TCP) port numbers;

decoding, by said network interface, a header of the first packet to determine a length of data to be stored in the destination entity, wherein said header conforms to a protocol above TCP;

determining, by said network interface, whether said first communication flow also comprises a second packet received at said communication device after said first packet was received at said communication device; and

transferring said header of said first packet to said host computer for processing said data.

4. (previously presented) The method of claim 3, further comprising:
transferring said second packet to said host computer;
wherein said host computer is configured to collectively process a data portion of said first packet and a data portion of said second packet in accordance with said protocol.

5. (previously presented) The method of claim 3, wherein said identifying comprises:

receiving, by said network interface, a flow key generated by concatenating an identifier of the source entity and an identifier of the destination entity;
wherein said first flow identifier comprises said flow key.

6. (previously presented) The method of claim 3, wherein said identifying comprises:

receiving, by said network interface, an index of said first communication flow in a flow database;

wherein said first flow identifier comprises said index.

7. (previously presented) The method of claim 3, wherein said determining comprises comparing said first flow identifier with a second flow identifier associated with a said second packet.
8. (original) The method of claim 7, wherein said determining further comprises:
storing said first flow identifier in a flow memory; and
storing said second flow identifier in said flow memory; and
comparing said stored first flow identifier and said stored second flow identifier.
9. (original) The method of claim 8, wherein said flow memory is an associative memory in said communication device.
10. (original) The method of claim 3, further comprising storing said first packet in a packet memory.
11. (original) The method of claim 10, wherein said determining comprises comparing said first flow identifier configured to identify said first communication flow with a second flow identifier configured to identify a second communication flow comprising a packet stored in said packet memory.
- 12-15. Canceled.
16. (previously presented) A method of transferring a packet from a network interface to a host computer, comprising:
receiving a first packet at a network interface for a host computer;
storing said first packet in a packet memory;
receiving a first flow identifier configured to identify a communication flow comprising said first packet, said first flow identifier including source and destination Transmission Control Protocol (TCP) port numbers;
storing said first flow identifier in a flow memory;

searching said flow memory for a second packet in said communication flow received at the network interface after said first packet;

transferring a header of said first packet to said host computer after decoding the header by the network interface to determine a length of data, wherein said header conforms to a protocol above TCP; and

configuring an indicator in a host memory to indicate whether processing of a remainder of said first packet by said host computer should be delayed to await transfer of said second packet to said host memory.

17. (previously presented) The method of claim 16, wherein said receiving a first flow identifier comprises:

receiving an index of said communication flow in a flow database;
wherein said flow identifier comprises said index.

18. (original) The method of claim 16, wherein said receiving comprises:
receiving a flow key comprising an identifier of a source of said first packet and an identifier of a destination of said first packet;
wherein said flow identifier comprises said flow key.

19. (original) The method of claim 16, wherein said packet memory comprises said flow memory.

20. (original) The method of claim 16, wherein said configuring comprises:
storing a first indicator in a host memory if said communication flow comprises said second packet; and
storing a second indicator in said host memory if said first packet is the only packet in said packet memory that is part of said communication flow.

21. (previously presented) A computer system for processing a packet received from a network interface, comprising:

- a network interface for a host computer, the network interface configured to receive a first packet from a network and transfer at least a data portion of said first packet to a host computer memory, said network interface comprising:

 - a packet memory configured to store said first packet;

 - a flow memory for storing a first flow number associated with said first packet, wherein said first flow number is configured to identify a communication flow comprising said first packet;

 - a packet batcher configured to determine whether the communication flow includes a second packet stored in said packet memory after said first packet; and a notifier configured to:

 - store a first code in a host indicator if said packet memory includes the second packet; and

 - store a second code in said host indicator if said packet memory does not include the second packet; and

 - a processor for processing a header portion of said first packet and determining a length of data to be stored in the destination entity, wherein said header portion conforms to a protocol above Transmission Control Protocol (TCP).

22. (previously presented) A non-transitory computer readable storage medium storing instructions that, when executed by a computer, cause the computer to perform a method of transferring a packet from a network interface to a host computer, the method comprising:

- receiving a first packet at a communication device that is a network interface for a host computer;

- identifying a first communication flow comprising said first packet with a first flow identifier configured to identify both the source entity and the destination entity, said flow identifier including a source and a destination Transmission Control Protocol (TCP) port number;

decoding, by said network interface, a header of the first packet to determine a length of data to be stored in the destination entity, wherein said header conforms to a protocol above TCP;

determining whether said first communication flow also comprises a second packet received at said communication device after said first packet was received at said communication device; and

transferring said header of said first packet to said host computer for processing data associated with said first packet.

23. (previously presented) A non-transitory processor readable storage medium containing a data structure configured to store information concerning a packet to be transferred from a network interface to a host computer that is attached to the network interface, the data structure including one or more entries, each entry comprising:

a flow number configured to identify a communication flow comprising a first packet received at the network interface from a source entity for a destination entity associated with the host computer, said flow number including a source and a destination Transmission Control Protocol (TCP) port number; and

a validity indicator configured to provide:

a first indication if said first packet is free of errors and data of said first packet is ready for transfer to the host computer; and

a second indication if said first packet is a control packet;

wherein said data structure is searched for a second entry containing said flow number to determine if said communication flow also comprises a second packet received at the network interface after said first packet, said first packet containing a header conforming to a protocol above TCP, the header decoded by the network interface.

24. (original) The method of claim 3, wherein said identifying comprises:
parsing said first packet to retrieve an identifier of the source entity and an identifier of the destination entity; and
combining said source entity identifier and said destination entity identifier to form said first flow identifier.

25. (previously presented) A communication interface, comprising:
a header parser configured to parse a header of a first packet received at the communication interface, the header including a Transmission Control Protocol (TCP) header and a header above TCP that is decoded to determine a length of data being received, wherein the first packet was issued from a source entity for a destination entity, and the communication interface is attached to the destination entity;
a flow database configured to facilitate management of a communication flow comprising the first packet, the flow database comprising:
a flow key configured to identify the communication flow using identifiers of the source entity and the destination entity, including TCP source and destination ports;
an activity indicator configured to indicate a recency with which a packet in the communication flow has been received; and
a validity indicator for indicating whether the communication flow is valid;
a code generator configured to generate an operation code for the first packet, to facilitate forwarding of the first packet toward the destination entity; and
a packet batching module configured to determine whether a second packet received at the communication interface is part of the communication flow.

26. (previously presented) A method of processing a packet through a communication interface for a destination entity, the method comprising:
receiving, by the communication interface, a first packet from a network, wherein the first packet is part of a communication flow between a source entity and the destination entity;
determining, by the communication interface, whether a first header portion of the first packet conforms to Transmission Control Protocol (TCP);

assembling a flow identifier to identify the communication flow, wherein said flow identifier comprises a source entity identifier and a destination entity identifier;

updating a flow database configured to facilitate management of communication flows through the communication interface, wherein said updating comprises:

configuring a flow activity indicator associated with the communication flow to reflect receipt of the first packet;

configuring a flow validity indicator associated with the communication flow to indicate that the communication flow is valid;

assigning an operation code to the first packet, said operation code indicating whether a portion of data in the first packet is reassembleable with another portion of data in another packet in the communication flow;

decoding, by the communication interface, a second header portion of the first packet to determine a length of data being received, said second header portion conforming to a protocol above TCP; and

determining whether a second packet received at the communication interface is part of the communication flow.

27. (original) The method of claim 3, further comprising:

storing a first indicator in the host computer if said first communication flow comprises said second packet; and

storing a second indicator in the host computer if said first packet is the only packet stored in the communication device that is part of said communication flow.